

References for Black Hills Mining Impacts

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Reference Title

MAPS SHOWING GEOLOGY, STRUCTURE, AND GEOPHYSICS OF THE
CENTRAL BLACK HILLS, SOUTH DAKOTA

By

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Including contributions by

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Alvis L. Lisenbee¹, James J. Norton², Zell Peterman², J.C. Ratté², and

R.E. Zartman⁵

2008

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Mineral Industry of South Dakota

Summary prepared under a Memorandum of Understanding between
the U.S. Geological Survey and the
South Dakota Geological Survey for collecting information on all
nonfuel minerals.

JOURNAL OF THE WASHINGTON ACADEMY OF SCIENCES VOL. 49, NO. 7

Geology Plus Adventure: The Story of the Hayden Survey By J. V.

Howell, Tulsa

NPL Site Narrative for Gilt Edge Mine

GILT EDGE MINE

Lead, South Dakota

Bulletin 16, Mineral and Water Resources of South Dakota, 1964

Mineral Resource Potential and Geology

of the Black Hills National Forest,

South Dakota and Wyoming

U.S. GEOLOGICAL SURVEY BULLETIN 1580

1986

Guilt Edge Mine, Lead, SD Stay Informed, Get Involved

Announcements and Key Topics

Settlement Aggrement and Order on Consent

Chapter 3: Euro-Americans Come To Stay; Indinas Dispossessed

Historic Resource STudy

Jewel Cave National Monument

Summary

MAP A. GEOLOGIC MAP OF THE CENTRAL BLACK HILLS
southern extent includes the first row of section in T6S
Includes R1E through R9E

Has info about two releases from the Homestake Mine and activity at the Gilt Edge Mine.

See if there are more up-to-date reports like this.

Hayden explored the Black Hills in 1857. Discovered the domal structure and map the first geologic map of the black Hills.

Info about the site up to 2000.

more up to date info is available at:

<https://cumulis.epa.gov/supercpad/cursites/csitinfo.cfm?id=0801668>

<https://cumulis.epa.gov/supercpad/SiteProfiles/index.cfm?fuseaction=second.cleanup&id=0801668>

screen shot of EPA webpage

<https://cumulis.epa.gov/supercpad/cursites/csitinfo.cfm?id=0801668>

MINES_SD_DISTRICTS_MINES.pdf
myb2-2012_13-sd.pdf
Pegmatite report.pdf
pegmatitesreport.pdf
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vol-04-no-2-exploring-the-black-hills-1855-1875.pdf

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5-B-16(1).pdf

6-Black hills NF mineral resources.pdf

7-Capture Gilt Edge.JPG

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Reference info

MAPS SHOWING GEOLOGY, STRUCTURE, AND GEOPHYSICS OF THE CENTRAL
BLACK HILLS, SOUTH DAKOTA

By

Jack A. Redden and Ed DeWitt

2008

THE MINERAL INDUSTRY OF SOUTH DAKOTA

This chapter has been prepared under a Memorandum of Understanding
between the U.S. Geological Survey and the
South Dakota Geological Survey for collecting information on all nonfuel
minerals.

Geology Plus Adventure: The Story of the Hayden Survey

Author(s): J. V. Howell

Source: Journal of the Washington Academy of Sciences, Vol. 49, No. 7 (July
1959), pp.220-224

Published by: Washington Academy of Sciences

Stable URL: <https://www.jstor.org/stable/24534746>

NPL Site Narrative for Gilt Edge Mine

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Lead, South Dakota

Bulletin 16, Mineral and Water Resources of South Dakota, 1964

6.DeWitt, E. et al. 1986.Mineral Resource Potential and Geology of the Black
Hills National Forest, South Dakota and Wyoming. U.S. Geological Survey
Bulletin 1580.

screen shot of EPA webpage

<https://cumulis.epa.gov/supercpad/cursites/csitinfo.cfm?id=0801668>

Guilt Edge Mine, Lead, SD Stay Informed, Get Involved

Announcements and Key Topics

Settlement Aggrement and Order on Consent

Chapter 3: Euro-Americans Come To Stay; Indinas Dispossessed

Historic Resource STudy

Jewel Cave National Monument

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1.Redden, J.A., DeWitt, E. et al. 2008. Maps showing geology, structure and geophysics of the Central Black Hill, South Dakota. U.S. Geological Survey Scientific Investigations Map 2777, sheet 1 of 2.

2.U.S. Geological Survey and South Dakota Geological Survey. 1998. The Mineral Industry of South Dakota.

3.Howell, J.V., 1959. Geology plus adventure: The Story of the Hayden Survey. Journal of the Washington Academy of Sciences, Vol 49, no 7, pp. 220-224.

4.U.S. Environmental Protection Agency, 2000. NPL Site Narrative for Gilt Edge Mine, Lead, South Dakota.

5.South Dakota State Geological Survey, 1964. Mineral and Water Resources of South Dakota, Bulletin Number 16.

8.Evans-Hatch, G. and Evans-Hach, M. 2006. Jewel Cave National Monument. Places of Passages. Historic Resources Study-Chapter 3, Euro-Americans come to stay; Indians Dispossessed 1875-1880s.

9.South Dakota Department of Game Fish and Parks et al. 2004. Draft Conceptual Restoration Plan for Whitewood Creek and the Belle Fourche and Cheyenne River Watersheds, South Dakota.

10.South Dakota Department of Environment and Natural Resources. Summary of Mining Industry in South Dakota, 2010.

11-MINES_SD_DISTRICTS_MINES.pdf

12-myb2-2012_13-sd.pdf

13-Pegmatite report.pdf

14-pegmatitesreport.pdf

15-plate-1 (1).pdf

16-vol-04-no-2-exploring-the-black-hills-1855-1875.pdf

LABORATORY TESTING OF TRACE METALS REMOVAL FROM MINE DRAINAGE AND
ARSENIC REMOVAL FROM GROUNDWATER IN THE BLACK HILLS OF SOUTH
DAKOTA

Arden D. Davis¹, Cathleen J. Webb², Jenifer L. Sorensen³, David J. Dixon¹, and
Haile Betemariam⁴

U.S. GEOLOGICAL SURVEY APPLIED RESEARCH STUDIES OF THE
CHEYENNE RIVER SYSTEM, SOUTH DAKOTA: DESCRIPTION AND
COLLATION OF DATA, WATER YEARS 1985-86

Edited by Kimball E. Goddard

USGS OFR 88-484, 1988

A total of 1,084 mines and prospects in 85 metallic mineral districts are located on the accompanying maps of the Black Hills. Except for a few placer districts, all metallic mineral districts contain mines that produced, or are inferred to have produced, ore. Mines and prospects in metallic mineral districts are plotted on the maps. Nonmetallic mineral districts and mines in them are not shown.

Table 1. Numeric list of mines and prospected in metallic mineral districts in the Black Hills, SD and WY 1083 mine sites listed

Table 2. Alphabetic list of mines and prospected in metallic mineral districts in the Black Hills, SD and WY

Table 3. Alphabetic list of metallic mineral districts and mines and prospects in the, Black Hills, SD and WY

Table 4. List of synonymns for mines and proposed in metallic mineral districts in the Black Hills, SD and WY 1080 mine sites listed

The Gilt Edge Superfund Site (Fig. 2) is at the headwaters of Strawberry Creek and Ruby Gulch in the Bear Butte Creek watershed of the northern Black Hills. was a surface heap-leach gold mine that was active from the 1980s until 1999. The EPA declared it a Superfund site in 2000.

The Cheyenne River System in western South Dakota has been impacted by the discharge of about 100 million metric tons of gold-mill tailings to Whitewood Creek near Lead, South Dakota.

11. Wilson, A.B. and DeWitt, E. 1995. Maps showing metallic Mineral Districts and Mines the the Black Hills, South Dakota and Wyoming. U.S. Geological Survey, Miscellaneous Investigations Series Map I-2445, pamphlet.

12. U.S. Geological Survey, 2016, 2012-2013 Minerals Yearbook, South Dakota (advance release).

13. Norton, J.J. 1964. Geology and Mineral Deposits of some Pegmatites in the Southern Black Hills, South Dakota. U.S Geological Survey Professional Paper 297-E.

14. Page, L. R. 1953. Pegmatite Investigations 1942-1945, Black Hills, South Dakota. U.S. Geological Survey Professional Paper 247.

15. Wilson, A.B. and DeWitt, E. 1995. Maps showing metallic Mineral Districts and Mines the the Black Hills, South Dakota and Wyoming. U.S. Geological Survey, Miscellaneous Investigations Series Map I-2445, map.

16. McLaird, J.D. and Turchen, L.V. 1974. Exploring the Black Hills, 1855-1875: Reports of the Government Expeditions. South Dakota State Historical Society.

https://denr.sd.gov/des/gw/superfund/Sites_Deleted_From_Superfund.aspx#Whitewood

Whitewood Creek: List on NPL 9/83, Delisted from NPL 8/96

Whitewood Creek flows through the towns of Lead and Deadwood in the northern Black Hills and into the Belle Fourche River. Until 1984 the creek was severely impacted by the discharge from the Homestake Mining Company operations. The influence of this pollution extended into the Belle Fourche and Cheyenne Rivers and into the Oahe Reservoir.

An EPA study in 1971 showed that Homestake was discharging 312 pounds of cyanide, 240 pounds of zinc, 721 pounds of copper and 2,700 tons of suspended solids, including 9.5 tons of arsenopyrite (AsFeS), a day into Gold Run Creek, which flows into Whitewood Creek. It is estimated that since 1900, about 75 million tons of tailings containing approximately 270,000 tons of arsenic were discharged into Whitewood Creek (Goddard, 1984).

The tailings and tailings contaminated soils are also a source of dangerous levels of arsenic. On October 23, 1981, an 18-mile stretch of Whitewood Creek from Whitewood to the Belle Fourche River was proposed for inclusion on the National Priorities List.

Cleanup actions were conducted by Homestake in 1992 and 1993 in the flood plain of Whitewood Creek to significantly lower residents' contact with tailings and tailings contaminated soils in high use areas (yards, gardens, driveways, etc.). As a result of remedial activities along this stretch of creek, 27 residential sites have been cleaned up to reduce the health risks associated with exposure to arsenic.

In 1994, Lawrence, Butte and Meade counties adopted county ordinances banning future excavation and construction on tailings remaining along Whitewood Creek. These ordinances also detail requirements for obtaining a residential building permit when constructing on "tailings impacted soils" (soil containing arsenic at greater than 100 parts per million). The site has entered the Operations and Maintenance phase, which requires water sampling of Whitewood Creek, monitoring of cleaned up residential sites for flood impacts, a yearly education program, and a five-year review program on the effectiveness of the remedial action. The EPA delisted the site from the Superfund National Priorities List on August 13, 1996.

https://denr.sd.gov/des/gw/superfund/Superfund_Sites.aspx#Gilt_Edge_Mine

Gilt Edge Mine: Listed on NPL 12/00

The Gilt Edge Mine NPL Site is located southeast of the town of Lead in the northern Black Hills in Lawrence County, South Dakota. The lead agency for the site is the EPA with support from DENR.

The area has been mined intermittently by several owners beginning in the late 1800s for gold. Cyanide leaching, mercury amalgamation, and zinc precipitation among other methods were used to recover gold. Mining activities began at the site in 1876 when the Gilt Edge and Dakota Maid claims were located. Mining continued sporadically until 1916. The Gilt Edge Mining Company was incorporated in South Dakota in 1935; the mine reopened in 1937 and operated until 1941.

In 1988, the Brohm Mining Co. started to re-mine the site and continued until they went bankrupt and abandoned the site on May 29, 1998. When Brohm left the 258-acre open pit, cyanide heap leach gold mine it was un-reclaimed, contained 150 million gallons of heavy metal laden acid water in three open pits, 3.3 million tons of ore on the heap leach pad, and 12 million cubic yards of acidic waste rock.

The DENR, through legal means, had Brohm Mining Co. continue site maintenance and water treatment until July 1999. DENR assumed operations from July 1999 to August 2000 when the site was taken over by EPA's Emergency Removal Program. The site was placed on the National Priorities List in December 2000 and is currently under EPA Superfund Remedial Program.

For More Information Contact:

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Phone: (605) 773-3296

Joy Jenkins

https://denr.sd.gov/des/gw/superfund/US_Forest_Service.aspx#United%20States%20Forest%20Service%20%C3%AF%C
United States Forest Service Riley Pass Abandoned Uranium Mine

The United States Forest Service is conducting a Superfund (CERCLA) non-time critical removal action to address metals and radioactive mine waste contamination coming from the Riley Pass Abandoned Uranium Mine. The mine is located on U.S. Forest Service property approximately 25 miles north of Buffalo, South Dakota in the North Cave Hills. The localized contamination is a result of uranium strip mining that occurred in early 1960's. The goal of the Forest Service's current actions at the site is to remove or reduce any exposure to the contaminated surface material.